

Purification Assignment

- Which of the following statements is correct
 - Two solid organic substances are said to be different if their mixed melting point is depressed below the melting points of both of these.
 - Ethanol and water cannot be separated from each other completely by simple distillation as they form azeotropic mixture.
 - Impure glycerine can be purified by ordinary distillation.
 - All of these.
- An organic compound from its aqueous solution is to be extracted with 100 ml. of $CHCl_3$. The amount of the organic compound extracted is maximum when
 - 100 ml of $CHCl_3$ is used in one lot
 - Two 50 ml portions of $CHCl_3$
 - Four 25ml portions of $CHCl_3$
 - Ten 10ml portions of $CHCl_3$
- In the Lassaigne's test for the detection of nitrogen in an organic compound, the blue or green colour is due to the formation of
 - $K_3[Fe(CN)_6]$
 - $K_4[Fe(CN)_6]$
 - $Fe(CN)_6$
 - $Fe_4[Fe(CN)_6]_3$
- In the Lassaigne's test, the blood red colouration is due to the formation of
 - $Fe(CNS)_2$
 - $NaCNS$
 - NH_4CNS
 - $Fe(CNS)_3$
- The formation of violet colour when sodium nitroprusside is added to sodium extract indicates the presence of
 - Nitrogen
 - Sulphur
 - Oxygen
 - Halogens
- A violet colour with sodium nitroprusside in the test of sulphur in an organic compound is due to the formation of
 - $Na_4[Fe(CN)_5NO]$
 - $Na_4[Fe(CN)_5NOS]$
 - $Na_3[Fe(CN)_5NS]$
 - $Fe_4[Fe(CN)_6]_3$
- For detection of sulphur in an organic compound, the Lassaigne's extract is acidified with dilute acetic acid and lead acetate is then added to it. The black ppt. is obtained which is due to the formation of
 - PbS
 - Na_2S
 - $PbSO_4$
 - None of these
- When an organic compound containing phosphorus is fused with fusion mixture, it gives
 - Na_2HPO_4
 - Na_3PO_4
 - NaH_2PO_4
 - Na_3PO_3
- For the detection of phosphorus, the organic compound after fusion with Na_2O_2 is extracted with water, boiled with HNO_3 and then ammonium molybdate added to it. A yellow ppt. is obtained which is due to the formation of
 - Ammonium phosphate
 - Ammonium phosphomolybdate
 - Ferric phosphate
 - Disodium ammonium phosphate
- When pieces of human hair are heated strongly with soda-lime, smell of ammonia can be detected. Which one of the following conclusion can be drawn from this observation
 - Ammonia is present in the human hair
 - Ammonium salt is present in hair
 - Hair contains amino acids
 - None of the above
- An organic compound containing N, S and O as extra elements is fused with sodium metal and then extracted with water. The species which is not present in the sodium extract is
 - CN^-
 - CNS^-
 - NO_3^-
 - S^{-2}
- In Lassaigne's test, the organic compound is at first fused with sodium metal. The sodium metal is used because
 - The melting point of sodium is low so it is easily fused with organic substances
 - Sodium is very much effective to bring about destructive reductions of organic compounds forming ionic inorganic salts $NaCN, Na_2S$ and NaX
 - All sodium salts are soluble in water.
 - None of these
- Which of the following reactions occur during the detection of nitrogen in organic substances by Lassaigne's test
 - $Na + C + N \rightarrow NaCN$
 - $FeSO_4 + 6NaCN \rightarrow Na_4[Fe(CN)_6] + Na_2SO_4$
 - $3Na_4[Fe(CN)_6] + 2Fe_2(SO_4)_3 \rightarrow Fe_4[Fe(CN)_6]_3 + 6Na_2SO_4$
 - None of these
- An organic compound is treated with $NaNO_2$ and dilute HCl at $0^\circ C$ and then the resulting solution is added to an alkaline solution of β -naphthol whereby a brilliant red dye is produced. This observation indicates that the compound possesses
 - $-NO_2$ group
 - $-CONH_2$ group
 - Aromatic $-NH_2$ group
 - Aliphatic $-NH_2$ group
- The Lassaigne's extract is boiled with dil. HNO_3 before testing for halogens because
 - Silver halides are soluble in HNO_3
 - Na_2S and $NaCN$ are decomposed by HNO_3
 - Ag_2S is soluble in HNO_3
 - $AgCN$ is soluble in HNO_3
- Assertion (A):** Lassaigne's test can be used to detect nitrogen in hydrazine.

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Reason (R): During fusion with sodium metal, nitrogen and carbon of the organic compound combine to form sodium cyanide.

- (a) Both *A* and *R* are true and *R* is a correct explanation of *A*
 (b) Both *A* and *R* are true but *R* is not a correct explanation of *A*
 (c) *A* is true but *R* is false
 (d) Both *A* and *R* are false
 (e) *A* is false but *R* is true

17. **Assertion (A):** Lithium is not used in Lassaigne's test.

Reason (R): It generally forms covalent compounds.

- (a) Both *A* and *R* are true and *R* is a correct explanation of *A*
 (b) Both *A* and *R* are true but *R* is not a correct explanation of *A*
 (c) *A* is true but *R* is false
 (d) Both *A* and *R* are false
 (e) *A* is false but *R* is true

18. Organic compound *A* $\xrightarrow{HNO_3 / AgNO_3}$ white ppt. *A* can be

- (a) NH_4Cl (b)  (c)  (d) 

19. In the detection of nitrogen, blue/green colour is due to formation of prussian blue. It is

- (a) $NaFe^{III}[Fe^{II}(CN)_6]$ (b) $NaFe^{II}[Fe^{III}(CN)_6]$ (c) $Na_4[Fe(CN)_6]$ (d) $Na_3[Fe(CN)_6]$

20. Detection of the chlorine is possible without preparing sodium extract in

- (a)  (b) $CHCl_3$ (c)  (d) $CH_2 = CHCH_2Cl$

21. The sodium extract prepared from sulphanilic acid, contains SCN^- . It gives blood-red colouration with

- (a) $FeCl_3$ (b) Na_2CS_3 (c) $FeSO_4$ (d) A mixture of Na_2S & CS_2

22. An organic compound contains *C*, *H*, *N*, *S* and *Cl*. For detection of chlorine in the compound, the sodium extract of the compound is at first heated with a few drops of concentrated HNO_3 and then silver nitrate solution is added to get a precipitate of $AgCl$. This digestion with HNO_3 , prior to addition of $AgNO_3$, is required

- (a) To prevent the formation of NO_2
 (b) To convert the CN^- and S^{2-} ions to volatile HCN and H_2S , otherwise they will interfere with the test by forming $AgCN$ and Ag_2S .
 (c) To prevent the hydrolysis of $NaCN$ and Na_2S
 (d) To form S_4N_4 which prevent the formation of $AgCl$ with $AgNO_3$

23. To detect iodine in presence of bromine, the sodium fusion filtrate is treated with $NaNO_2$ + glacial acetic acid + CCl_4 . Iodine is detected by the appearance of

- (a) Purple colour in the organic layer of CCl_4 (b) Brown colour in the organic layer of CCl_4
 (c) Deep blue colour in CCl_4 layer (d) Yellow colour in CCl_4 layer

24. In Carius method 0.099g organic compound gave 0.287g $AgCl$. The percentage of chlorine in the compound will be

- (a) 28.6 (b) 71.7 (c) 35.4 (d) 64.2

25. 0.5g of hydrocarbon gave 0.9g water on combustion. The percentage of carbon in hydrocarbon is

- (a) 75.8 (b) 80.0 (c) 56.6 (d) 28.6

26. 0.24g of an organic compound gave 0.22g CO_2 on complete combustion. If it contains 1.66% hydrogen. Then the percentage of *C* and *O* will be

- (a) 12.5 and 36.6 (b) 25 and 75 (c) 25 and 36.6 (d) 25 and 80

27. 0.216 g of an organic compound gave 28.8 cm^3 of moist nitrogen measured at 288 K and 732.7mm pressure. The percentage of nitrogen in the substance is approximately (Aq. tension at 288K = 12.7mm)

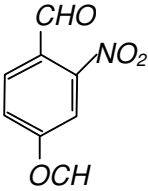
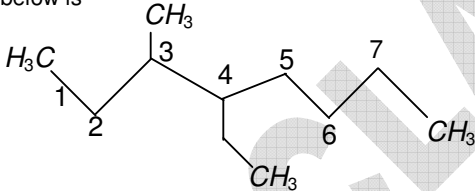

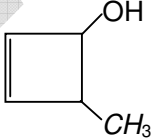
- (a) 15 (b) 20 (c) 25 (d) 30

28. 0.10g of an organic compound containing phosphorus gave 0.222g of $Mg_2P_2O_7$. Then the percentage of phosphorus in it is

- (a) 62 (b) 6.2 (c) 31 (d) 13

29. 0.765g of an acid gives 0.535g of CO_2 and 0.12g of H_2O . Then, the ratio of the percentage of carbon and hydrogen is

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- (a) 3-dimethylamino-3-methyl pentane
(c) 3, (N, N-Trimethyl) pentanamine
- (b) 3 (N, N-Trimethyl)-3-aminopentane
(d) 3-N, N dimethyl amino-3-methyl pentane
44. IUPAC name of $\begin{array}{c} H & C_4H_9 \\ | & | \\ CH_3 - C - C - CH_3 \\ | & | \\ C_2H_5 & CH_3 \end{array}$ is
- (a) 2-butyl-2-methyl-3-ethylbutane
(c) 3, 4, 4-trimethylheptane
- (b) 2-ethyl-3, 3-dimethylheptane
(d) 3, 4, 4-trimethyloctane
45. IUPAC name of the compound $\begin{array}{c} CH_2 - CH - CH_2 \\ | & | & | \\ CN & CN & CN \end{array}$ is
- (a) 1, 2, 3- tricyanopropane
(c) Propane-1, 2, 3 tricarbonitril
- (b) 3-cyanopentane-1.5- dinitrile
(d) Propane tricarbylamine
46. What is the correct IUPAC name of 
- (a) 4-methoxy-2-nitrobenzaldehyde
(c) 4-methoxy-6-nitrobenzaldehyde
- (b) 4-formyl-3-nitro anisole
(d) 2-formyl-5-methoxy nitrobenzene
47. Name of the compound given below is 
- (a) 5-ethyl-6-methyloctane
(b) 4-ethyl-3-methyloctane
(c) 3-methyl-4-ethyloctane
(d) 2, 3-diethylheptane
48. IUPAC name of the compound $\begin{array}{c} CH_3 \\ | \\ CH_3 - CH_2 - CH - CH_2 - CH - CH_2 - CH_2 - CH_3 \\ | \\ CH \\ / \quad \backslash \\ CH_3 \quad CH_3 \end{array}$
- (a) 4-isopropyl 1-6-methyl octane
(c) 3-methyl-5-isopropyl octane
- (b) 3-methyl-5-(1'-methylethyl) octane
(d) 6-methyl-4-(1'-methylethyl) octane
49. IUPAC name of  is
- (a) 4, 5-dimethyl oct-4-ene
(b) 3, 4-dimethyl oct-5-ene
(c) 4, 5-dimethyl oct-5-ene
(d) None
50. The IUPAC name of  is
- (a) 3-methyl cyclo-1-buten-2-ol
(c) 4-methyl cyclo-1-buten-3-ol
- (b) 4-methyl cyclo-2-buten-1-ol
(d) 3-methyl cyclo-3-buten-1-ol